MARCIN SENDERA

AI / Machine Learning Engineer, Applied AI Scientist

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PROFESSIONAL SUMMARY

Results-driven AI/ML Engineer with a PhD and a background in fundamental research. Proven expertise in architecting and deploying scalable, state-of-the-art models in Python and PyTorch. Passionate about translating cutting-edge research into robust, high-impact AI systems.

PROFESSIONAL EXPERIENCE

Research Intern (ML Engineering Focus)

Mila – Québec AI Institute

Oct 2023 – Sep 2024 Montréal, Canada

- Engineered and optimized novel diffusion samplers in PyTorch, enhancing the samplers scalability to large-scale.
- Architected a scalable codebase for reproducible ML experiments on an HPC cluster, leveraging Conda and Slurm to manage complex dependencies and workflows.
- Owned the implementation of complex generative models, improving performance and reliability, which directly enabled multiple high-impact research publications.
- Collaborated with world-class experts, including working on projects together with Prof. Yoshua Bengio.

Machine Learning Engineer

UBS (R&D)

Aug 2019 – Jul 2021 Kraków, Poland

- Deployed a production-level LLM system for automated data extraction from financial documents, significantly improving data processing throughput.
- Owned the end-to-end development of NLP models, from fine-tuning and evaluation to integration with backend systems, directly improving the accuracy of investment analysis.
- Collaborated with product and engineering teams to integrate ML solutions into business workflows, ensuring robust and scalable performance.

KEY PROJECTS

Efficient Machine Unlearning Library

Developed a Python library for fast machine unlearning via SVD, packaged for easy PyTorch integration.
Tech: Python, PyTorch, NumPy, Git.

Advanced Diffusion Samplers

Engineered diffusion samplers for complex scientific densities (chemistry, astrophysics) and deployed on HPC clusters.
Tech: PyTorch, Slurm.

Few-Shot Learning with Hypernetworks

Built and benchmarked a novel few-shot classification model ('Hypershot') in PyTorch, outperforming baselines on several CV datasets.
Tech: PyTorch, Scikit-learn.

Non-Gaussian Gaussian Processes

Implemented a novel GP model for few-shot regression, improving performance on complex real-world datasets.
Tech: PyTorch, Scikit-learn, Jupyter Notebooks.

TECHNICAL SKILLS

Languages & Frameworks

Expert: Python, PyTorch
Proficient: TensorFlow, Hugging Face, Scikit-learn, NumPy, Pandas, SciPy, Matplotlib
Familiar: JAX, R, C/C++, Java

MLOps & Cloud

Expert: Git/GitHub
Proficient: Docker, Slurm/HPC, WandB, Neptune.ai
Familiar: CI/CD (GitHub Actions), AWS (S3, EC2), Azure, GCP (Compute)

Core ML Expertise

Deep Expertise *(publication-level)*: Generative AI (LLMs, Diffusion Models), Probabilistic & Bayesian DL (VAEs, Flows, GANs, BNNs)
Proficient: Model Optimization, System Design, NLP, Computer Vision

EDUCATION

Ph.D. in Computer Science

Jagiellonian University

2019 – 2025/26 (exp.) Kraków, Poland

Thesis: Probabilistic deep learning: from efficient sampling to principled generation.
GPA: 5.00/5.00

M.Sc. in Computer Science

AGH University

2017 – 2019 Kraków, Poland

GPA: 4.46/5.00

B.Eng. in Computer Science

AGH University

2013 – 2017 Kraków, Poland

GPA: 4.28/5.00

GRANTS & AWARDS

- **Winner of Witold Lipski Award for Young Computer Scientists** (2025)
- **Principal Investigator in National Science Centre (NCN) PRELUDIUM Grant** (Funding: ~140k PLN)
- **Working in multiple National Science Centre (NCN) OPUS grants** - on probabilistic deep learning and meta-learning
- **Team Member**, CIFAR AI Catalyst Grant on "AI Mathematician"
- **Best Paper Award Finalist**, WACV2023